

## CLAIMS

1.-6. (Canceled)

7. (Currently Amended) An interpolator, comprising:

a feature extractor to populate a feature table by identifying occurrences of a targeted image feature in a pixel array, where the targeted image feature is chosen from a group of image features;

a feature comparator to populate a match table by matching occurrences in the feature table; and

means for generating a target pixel, the target pixel interpolated from the pixel array responsive to the match table;

where the group of image features comprises one or more of a ramp, an edge, a segment, and noise, and the feature extractor is adapted to be programmable such that the targeted image feature is changed from a first one of the group of image features to a second one of the group of image features.

8. - 9. (Cancelled)

10. (Previously presented) The interpolator of claim 7 where the targeted image feature is adapted to dynamically change according to user preferences such that the targeted image feature is dynamically changed from a first one of the group of image features to a second one of the group of image features.

11. (Previously presented) The interpolator of claim 7 where the feature extractor includes a state machine for each image feature in the group of image features.

12. (Previously presented) The interpolator of claim 7 where the feature comparator is adapted to match occurrences in adjacent rows of the pixel array.

13. (Previously presented) The interpolator of claim 7 where the feature comparator is adapted to match occurrences in adjacent columns of the pixel array.

14. (Previously presented) The interpolator of claim 7 comprising an alignment controller to align matched occurrences in the match table.

15. (Previously presented) The interpolator of claim 14 where the alignment controller is adapted to compute relative shifts between adjacent rows or columns.

16. (Previously presented) The interpolator of claim 14 where the alignment controller is adapted to identify a transition segment.

17. (Previously presented) The interpolator of claim 14 where the alignment controller is adapted to identify a pivot pixel.

18. (Previously presented) A method for interpolating a target pixel in an array of source pixels comprising:

populating a feature table by identifying occurrences of a targeted image feature in the source pixels, the targeted image feature chosen from a group of image features;

populating a match table by matching occurrences in the feature table; and

generating a target pixel responsive to the matching, the target pixel interpolated from the array of source pixels;

changing the targeted image feature from a first one of the group of image features to a second one of the group of image features where the group of image features includes one or more of a ramp, an edge, a segment, and noise.

19. - 20. (Cancelled)

21. (Previously presented) The method of claim 18, further comprising dynamically changing the targeted image feature according to user preferences.

22. (Previously presented) The method of claim 18 where identifying occurrences of the targeted image features includes using a state machine for each of the group of image features.
23. (Previously presented) The method of claim 18 where matching occurrences in the feature table includes matching occurrences in adjacent rows of the pixel array.
24. (Previously presented) The interpolator of claim 18 where matching occurrences in the feature table includes matching occurrences in adjacent columns of the pixel array.
25. (Previously presented) The method of claim 18 further comprising aligning matched occurrences in the match table.
26. (Previously presented) The method of claim 25 where aligning includes computing relative shifts between adjacent rows or columns.
27. (Previously presented) The method of claim 25 where aligning includes identifying a transition segment.
28. (Previously presented) The method of claim 25 where aligning includes identifying a pivot pixel.
29. (Previously presented) The interpolator of claim 7 where the feature table includes a plurality of pairs of numbers, a first number in the pair defining a start position and second number in the pair defining an intensity for each of the occurrences identified.
30. (Previously presented) The interpolator of claim 7 where the feature comparator is adapted to match like occurrences in adjacent rows or columns of the feature table.

31. (Previously presented) The interpolator of claim 7 where, after a first row of pixel data, the feature comparator is adapted to populate the match table at about the same time as the feature extractor populates the feature table.

32. (Previously presented) The method of claim 18 where populating the feature table includes populating the feature table with a plurality of pairs of numbers, a first number in the pair defining a start position and a second number in the pair defining an intensity for each of the occurrences identified.

33. (Previously presented) The method of claim 32 where populating the match table includes matching like occurrences in adjacent rows or columns of the feature table.

34. (Previously presented) The method of claim 32 where the populating the match table occurs at the same time as the populating the feature table and after receiving a first row of pixel data.